

## **Encouraging Construction of Knowledge by Students**

Pearlyn Lim, *Nanyang Technological University*

Lay Hoon Peh, *Nanyang Technological University*

In this study, we explore how to help students construct knowledge with minimal explicit teaching. The teacher acts as a facilitator in the process of knowledge construction. We combined elements of the open-ended approach and the post-teahouse approach and came up with a few lesson packages. We will share our experience in carrying out lessons on the topics of speed and percentage in two primary schools.

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## Collaborative Learning Based on Sharing and Jumping Task to Enhance Learning Quality

Wiwik K. Sari, *Universitas Pendidikan Indonesia*

Asep Supriatna, *Universitas Pendidikan Indonesia*

Difficulties of student learning is one of the factors that cause low student learning achievement. Based upon analysis of student's learning achievement of chemistry high school of UPI's attached senior high school found a gap between slower learner and faster learner. Through collaborative learning, students will be facilitated with sharing and jumping task to challenge students to learn each other. It is belief that, student involvement actively in the learning process can affect student learning achievement. Sharing task is expected to facilitate slower learner while jumping task is expected to facilitate faster learner so that they are not getting bored in learning. The learning process with sharing and jumping tasks allows students to improve academic ability with a "two-tiered rocket" pattern that is the first to increase academic ability at a low level and the second to increase academic ability from middle to upper level. This research aims to develop collaborative learning based on sharing and jumping task based on student learning obstacle experienced during studying chemistry. This research was conducted at grade XI of attached senior high school to Indonesia University of Education. The didactical design research (DDR) method is applied utilizing qualitative and quantitative data. Didactical design is a systematic study of designing, developing and evaluating educational interventions as a solution to solving complex problems in educational practice. There are 3 stages in developing didactical design, i.e, didactical design analysis in the form of didactical and pedagogical anticipation, metapedadidactical analysis, and repressive analysis. Data collection techniques are using paper-pencil, observation, interviews, documentation and recording (video and audio). The result of this research is a valid and feasible didactical design used in learning process of collaborative learning based on sharing and jumping task to enhance the learning quality. The results of this study will be presented at the conference.

Keyword : collaborative learning, learning quality, sharing and jumping task

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## Students' Grit in the Mathematics Classroom Using Lesson Study and Open Approach

Ariya Suriyon, *Nakhon Phanom University*

This paper describes a study of students' grit during problem solving in the mathematics classroom using Lesson Study and Open Approach (Inprasitha, 2011; 2015). Four 1st grade students, age six to seven years, served as a target group from the primary school which has participated in the teacher professional development with innovation of Lesson Study and Open Approach in Higher-Order Thinking in Mathematics Project in Northeast, launching by Center for Research in Mathematics Education (CRME), Khon Kaen University, Thailand. The research was focused on observing the nature of occurrences in the class (Begle, 1969). In addition the data were examined by triangulation among three sources: video recording, field notes, and students' written works. Data analysis was based on Open Approach (Inprasitha, 2015): 1) posing open-ended problem, 2) students' self learning, 3) whole class discussion, and 4) summarize through connecting students' mathematical ideas emerged in the classroom. The study results showed that the mathematics class using Lesson Study and Open Approach allowed students to exhibit grit, they won't give up easily, and finally succeeded relevant to the four teaching steps.